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Chau

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(54) **NAVIGATION-BASED AD UNITS IN STREET VIEW**

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(51) **Int. Cl.**
G06Q 30/02 (2012.01)

(52) **U.S. Cl.**
CPC ***G06Q 30/0261*** (2013.01); ***G06Q 30/0275*** (2013.01)

(58) **Field of Classification Search**
USPC 705/14.63, 14.71, 14.57, 14.73
See application file for complete search history.

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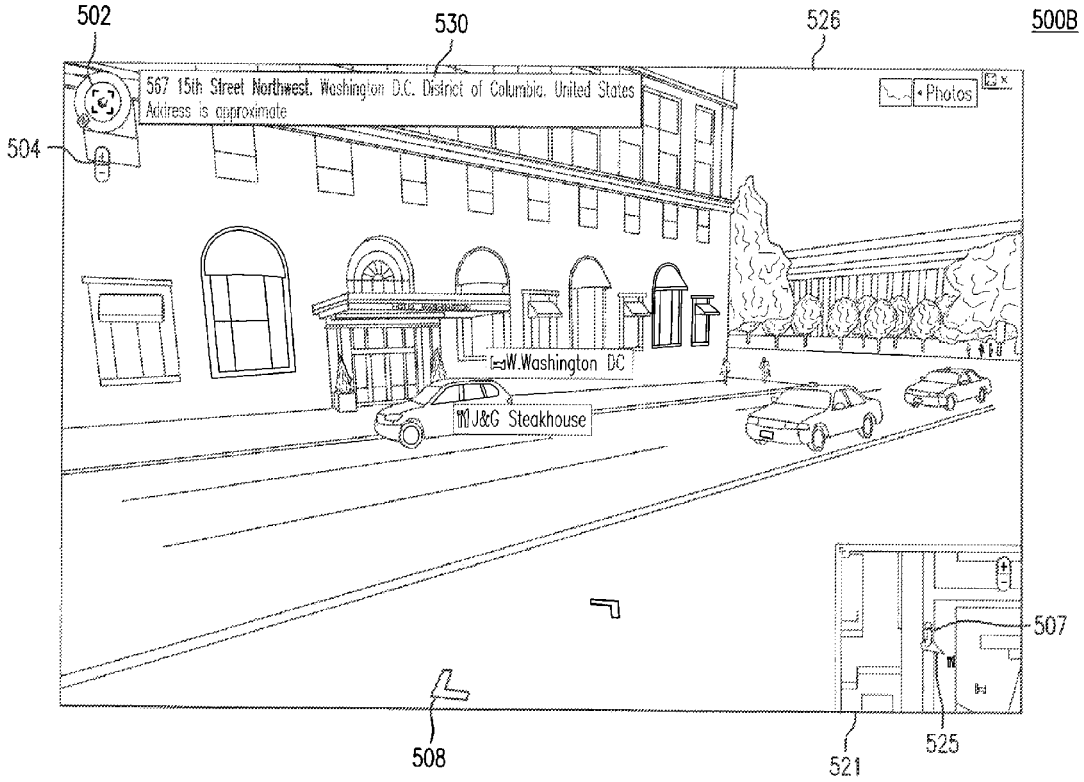
(57) **ABSTRACT**

Systems, methods, and computer storage mediums for directing a user to an image of an advertiser's geolocation are provided. An exemplary method includes retrieving a first image associated with a geolocation, where the geolocation is based on a user action. At least one advertising unit is also selected based on at least the geolocation associated with the first image. Each advertising unit includes at least one geolocation associated with an advertiser. At least one advertising unit is then placed on the first image. Finally, a second image is retrieved when a placed advertising unit is selected by the user. The second image is retrieved based on the geolocation associated with the placed advertising unit.

20 Claims, 9 Drawing Sheets



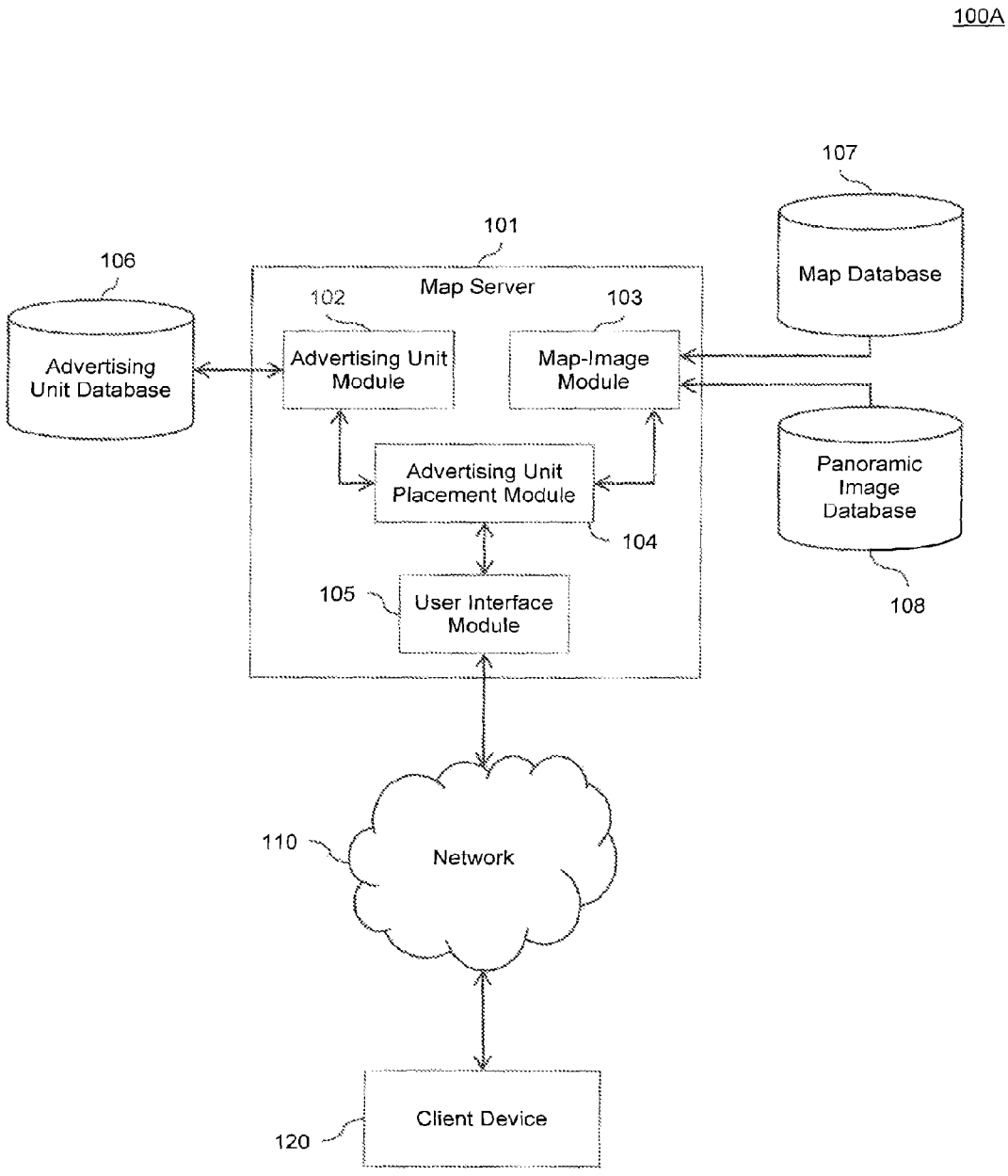

100A
107
Map Database
101
Map Server
106
Advertising Unit Database
102
Advertising Unit Module
103
Map-Image Module
Advertising Unit Placement Module
104
Panoramic Image Database
108
105
User Interface Module
110
Network
120
Client Device

FIG. 1A

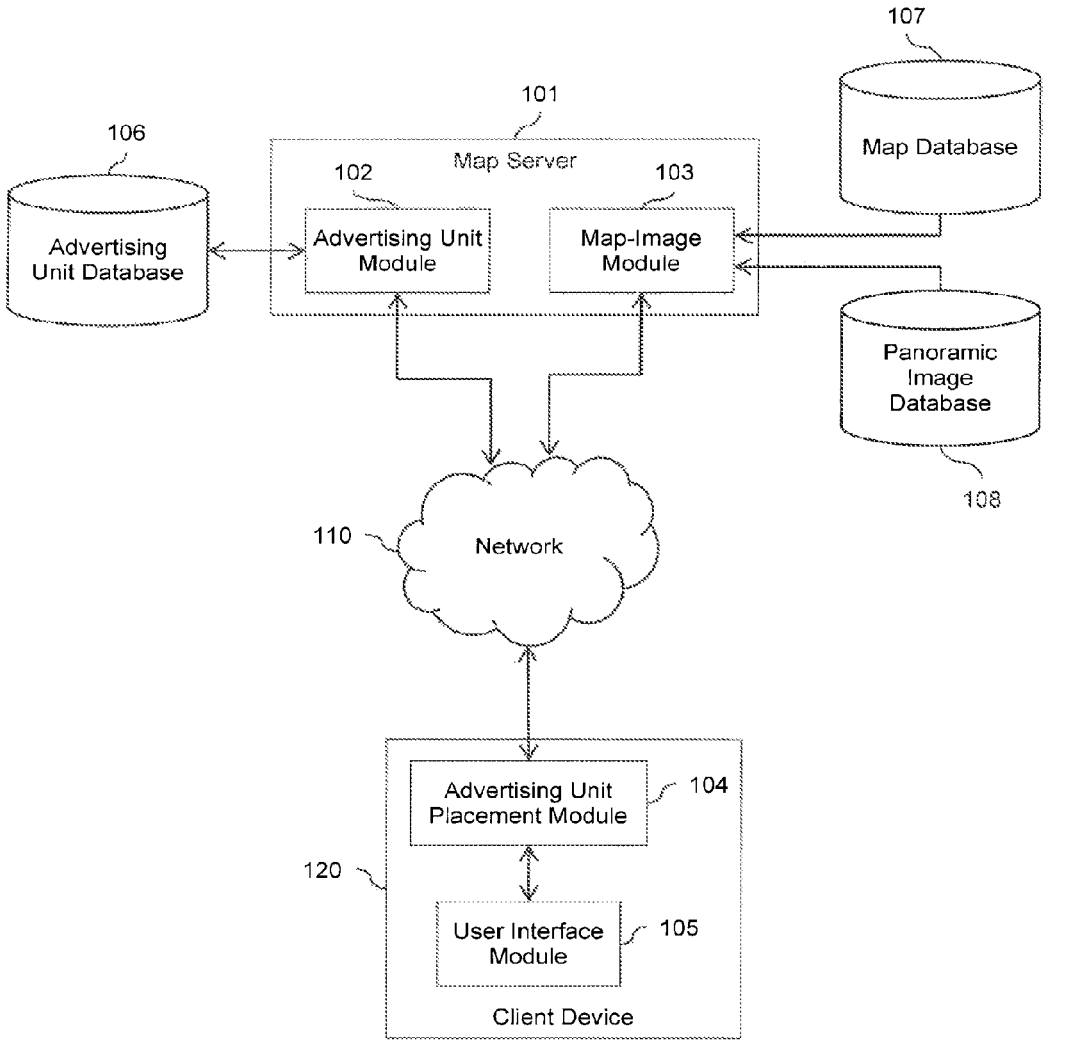

100B
107
Map Database
101
Map Server
106
102
103
Advertising Unit Database
Advertising Unit Module
Map-Image Module
Panoramic Image Database
108
110
Network
Advertising Unit Placement Module
104
120
User Interface Module
105
Client Device

FIG. 1B

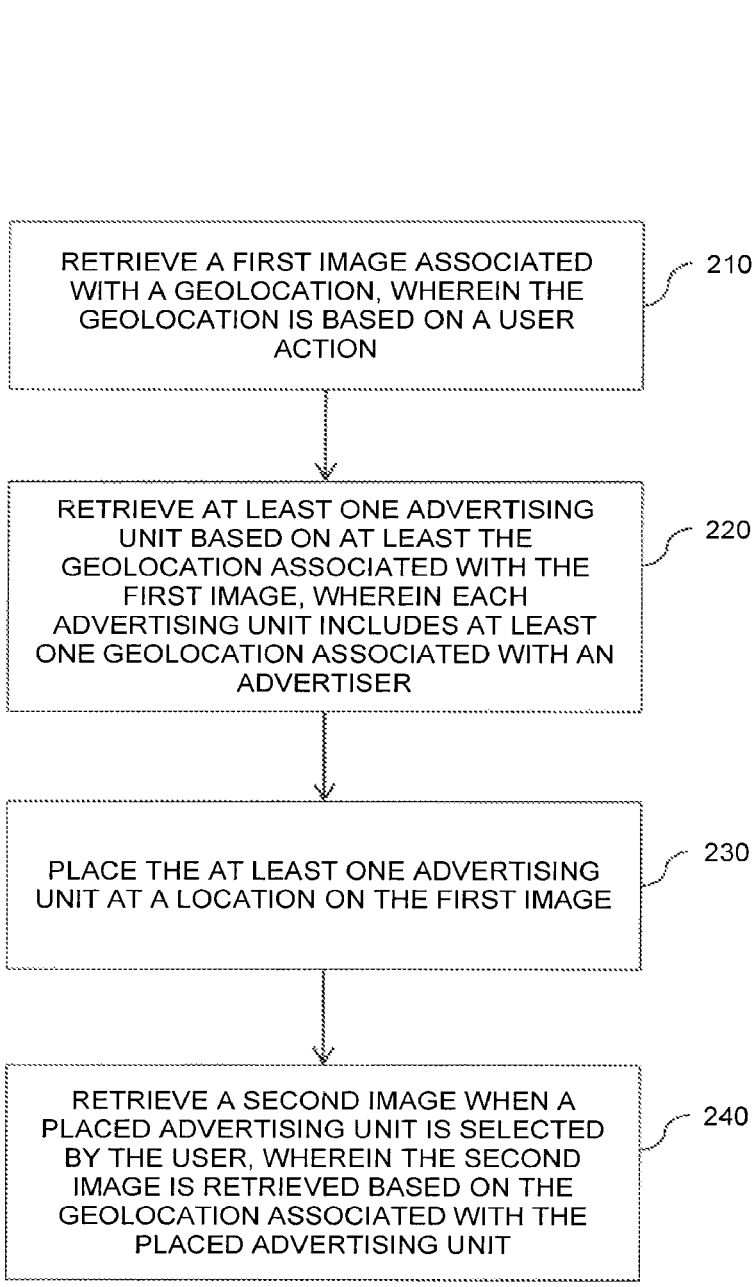

200
RETRIEVE A FIRST IMAGE ASSOCIATED WITH A GEOLOCATION, WHEREIN THE GEOLOCATION IS BASED ON A USER ACTION
210
RETRIEVE AT LEAST ONE ADVERTISING UNIT BASED ON AT LEAST THE GEOLOCATION ASSOCIATED WITH THE FIRST IMAGE, WHEREIN EACH ADVERTISING UNIT INCLUDES AT LEAST ONE GEOLOCATION ASSOCIATED WITH AN ADVERTISER
220
PLACE THE AT LEAST ONE ADVERTISING UNIT AT A LOCATION ON THE FIRST IMAGE
230
RETRIEVE A SECOND IMAGE WHEN A PLACED ADVERTISING UNIT IS SELECTED BY THE USER, WHEREIN THE SECOND IMAGE IS RETRIEVED BASED ON THE GEOLOCATION ASSOCIATED WITH THE PLACED ADVERTISING UNIT
240

FIG. 2

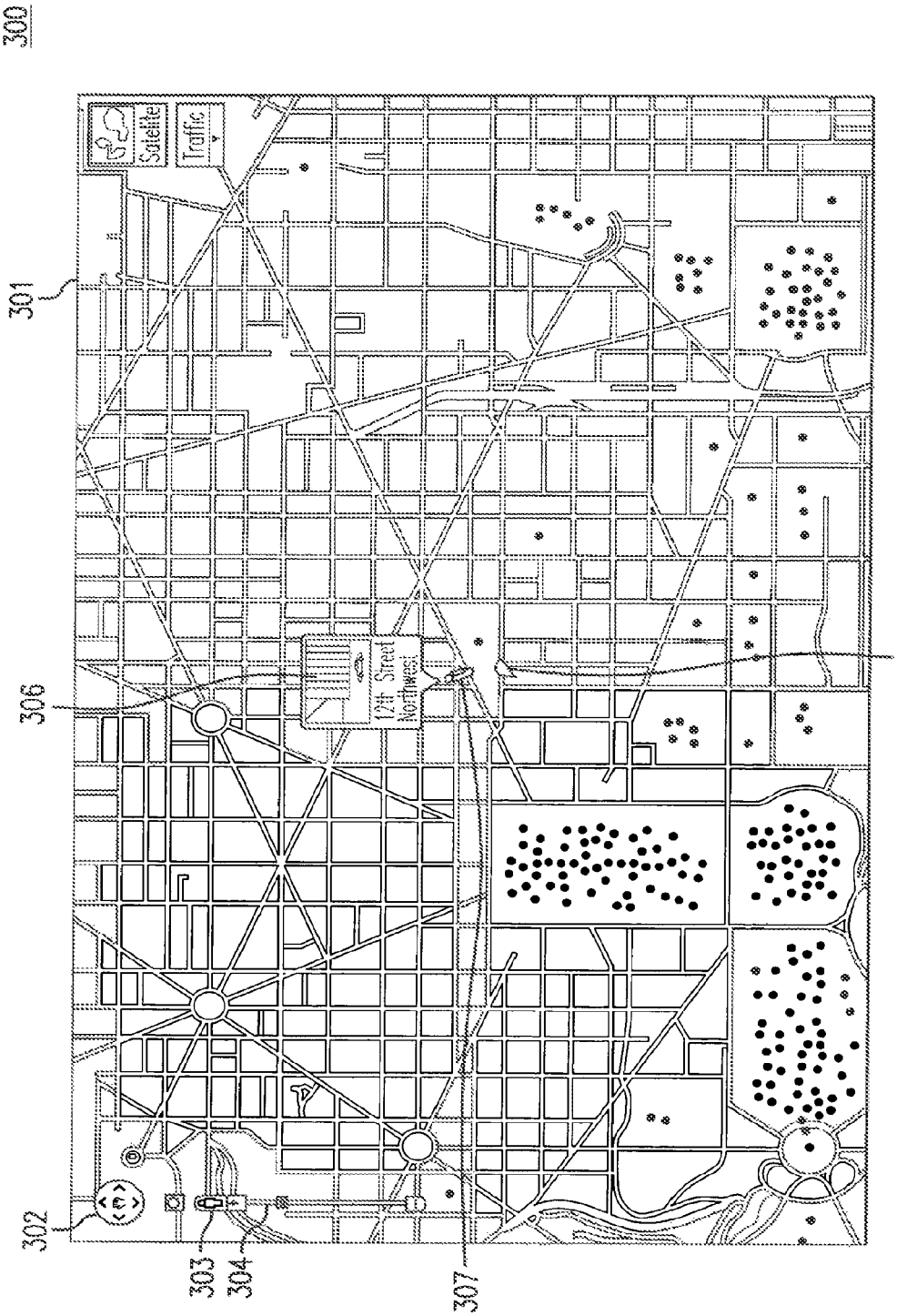

300
Satellite
Traffic
12th Street Northwest
301
302
303
304
305
306
307

FIG. 3

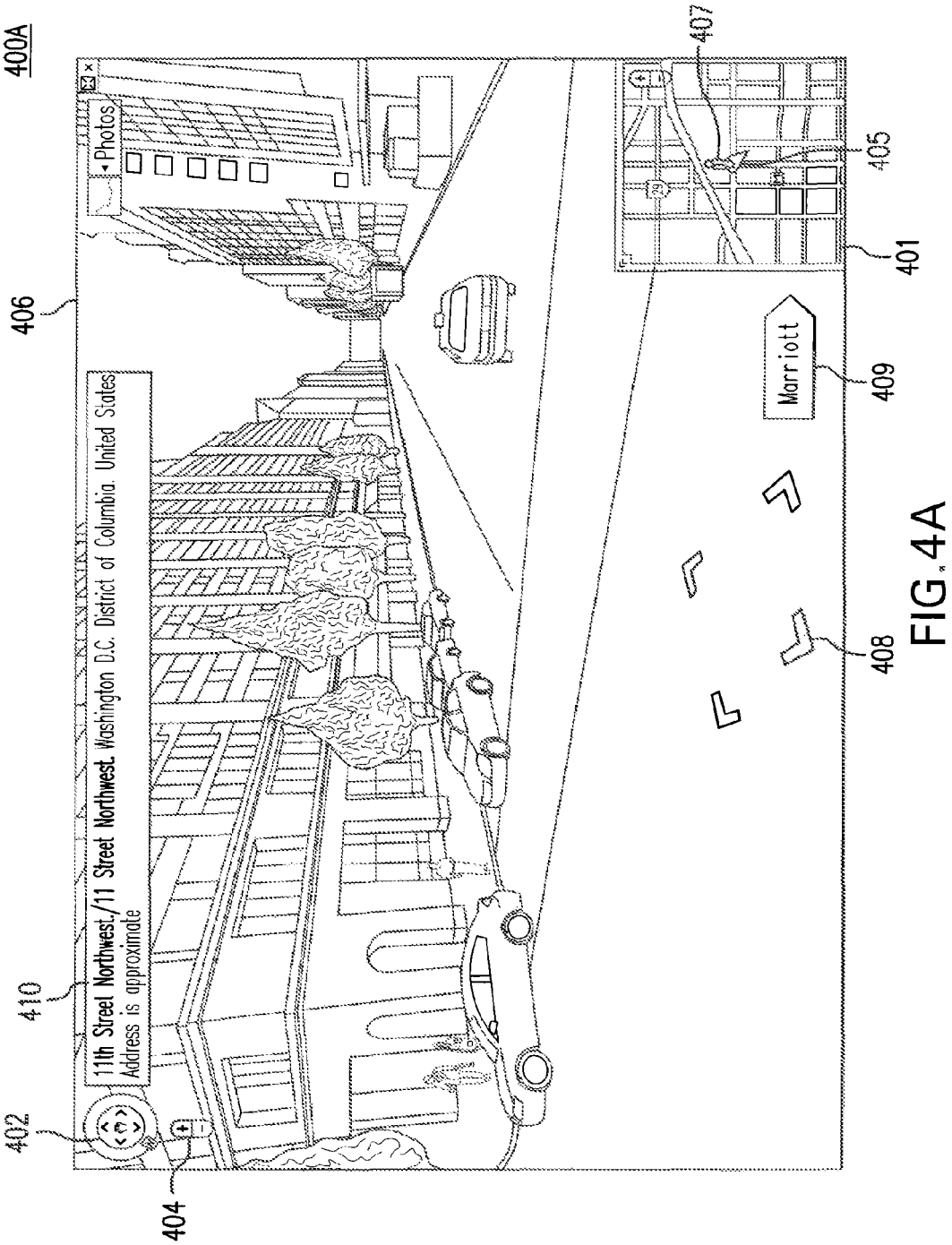
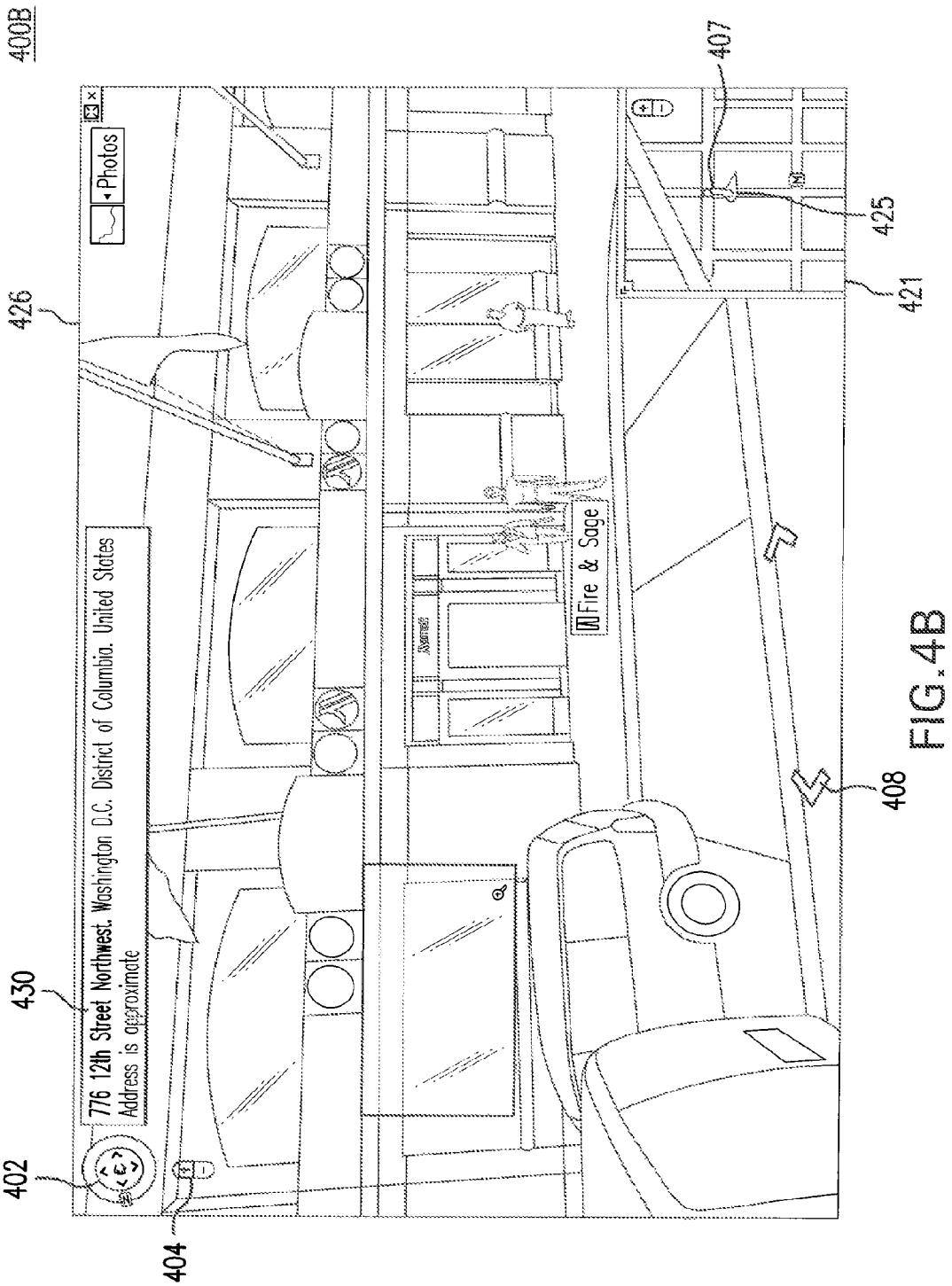

400A
Photos
11th Street Northwest./11 Street Northwest, Washington D.C. District of Columbia, United States
Address is approximate
Marriott
402
404
406
407
405
401
409
408
410

FIG. 4A


400B
407
425
421
426
Photos
776 12th Street Northwest, Washington D.C. District of Columbia, United States
Address is approximate
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Fire & Sage
402
404
408

FIG. 4B

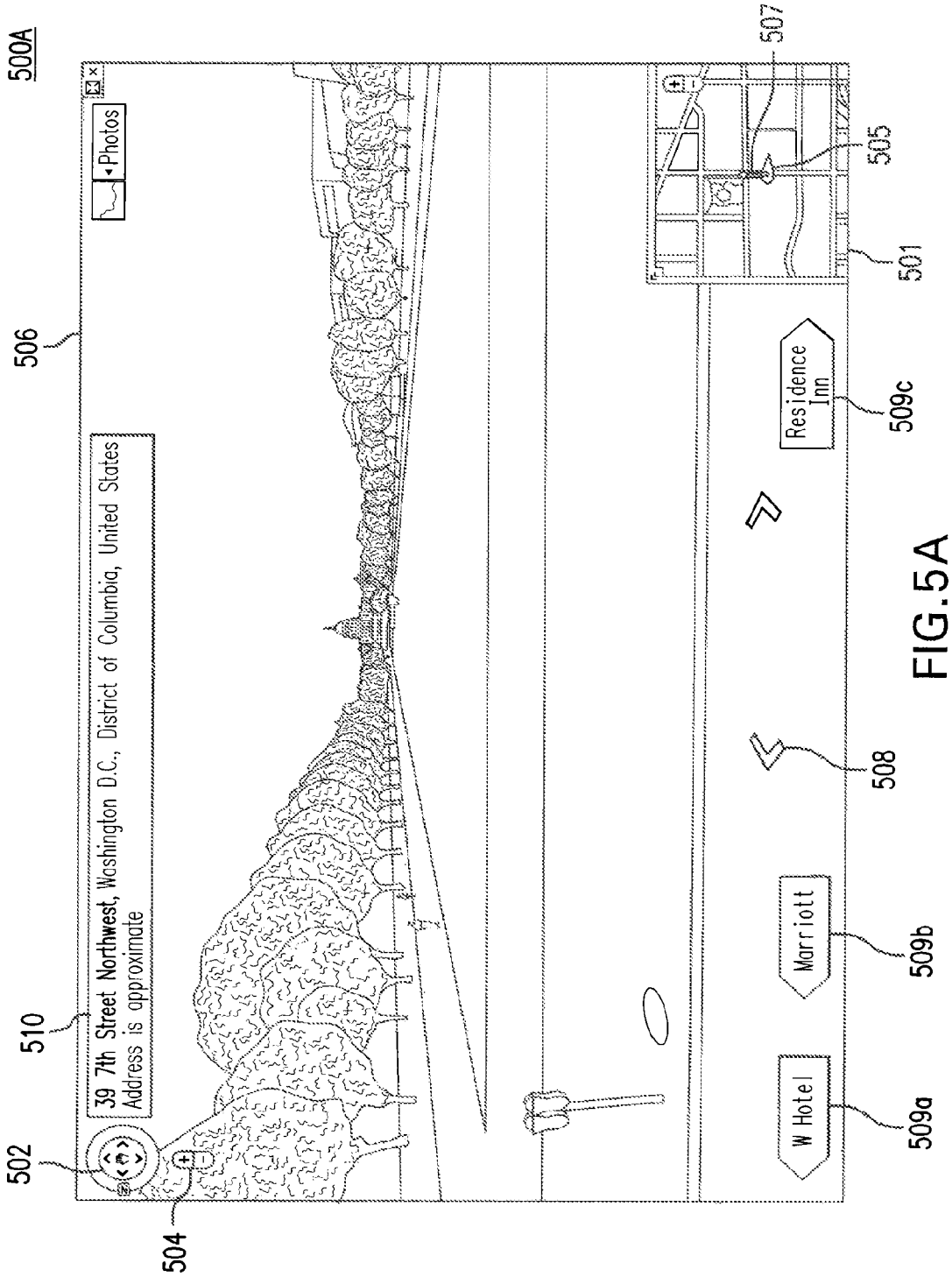
500A
Photos
506
39 7th Street Northwest, Washington D.C., District of Columbia, United States
Address is approximate
510
502
504
507
505
501
Residence Inn
509c
508
Marriott
509b
W Hotel
509a

FIG.5A

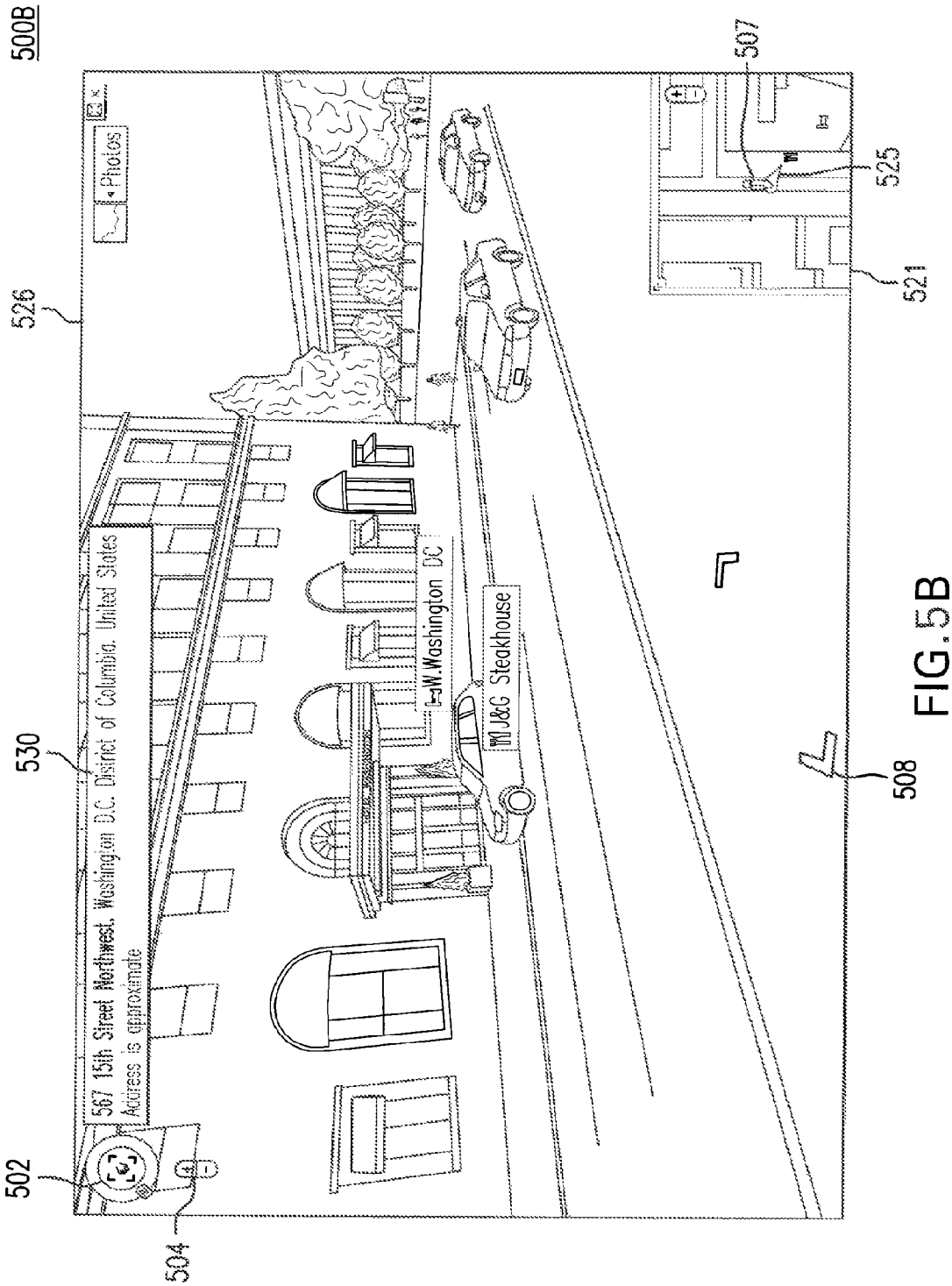
500B
Photos
526
530
502
504
507
525
521
508
567 15th Street Northwest, Washington D.C. District of Columbia, United States
Address is approximate
J&G Steakhouse
W Washington DC

FIG. 5B

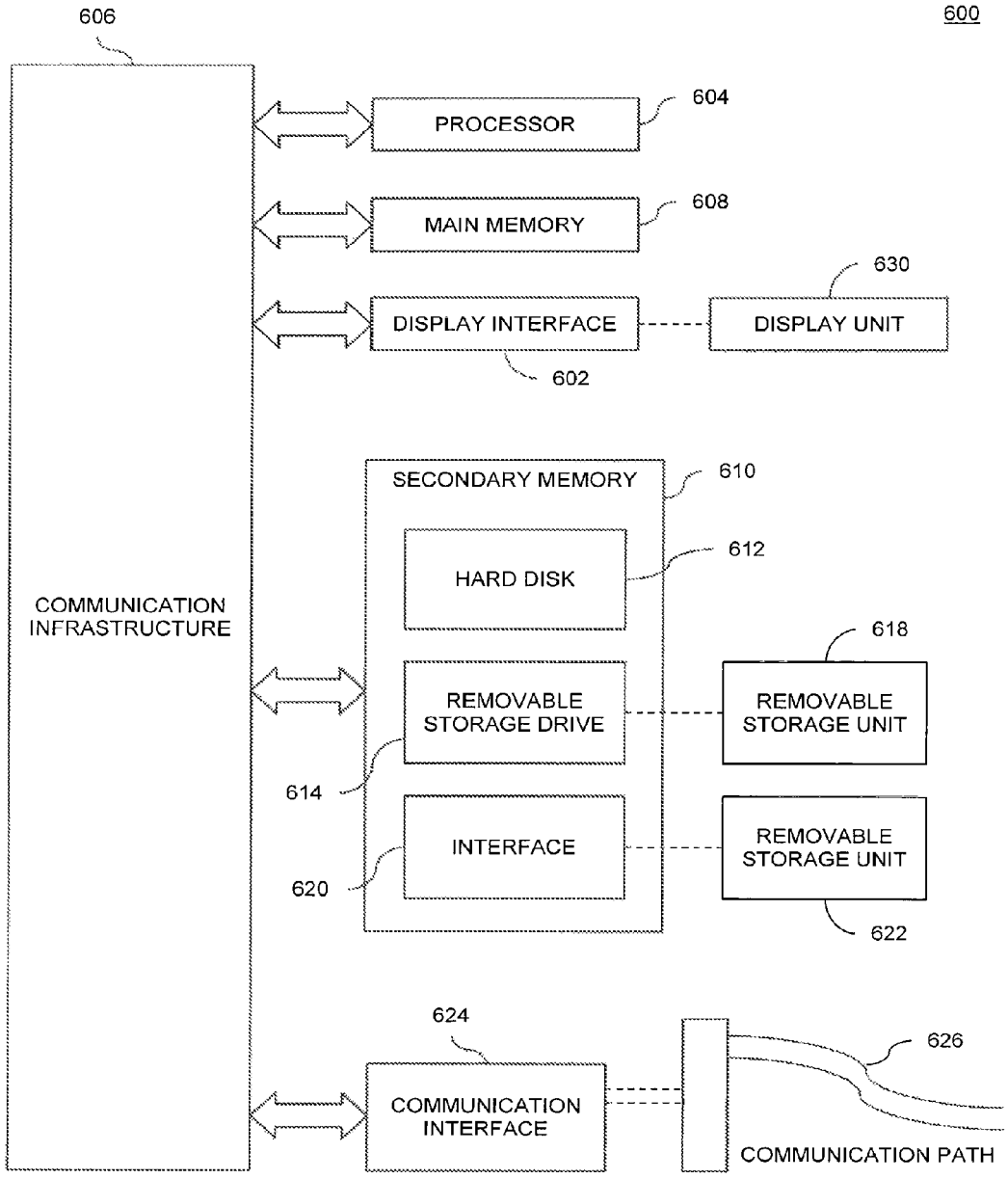
606
600
PROCESSOR
604
MAIN MEMORY
608
630
DISPLAY INTERFACE
DISPLAY UNIT
602
SECONDARY MEMORY
610
HARD DISK
612
COMMUNICATION INFRASTRUCTURE
618
REMOVABLE STORAGE DRIVE
REMOVABLE STORAGE UNIT
614
INTERFACE
620
REMOVABLE STORAGE UNIT
622
624
626
COMMUNICATION INTERFACE
COMMUNICATION PATH

FIG. 6

NAVIGATION-BASED AD UNITS IN STREET VIEW

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of U.S. application Ser. No. 13/229,308, filed on Sep. 9, 2011, the disclosure of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

Webpages commonly display advertisements provided by an advertiser. These advertisements are traditionally retrieved via a URL embedded in a webpage and displayed in a predefined position. Upon selecting an advertisement, a user is usually directed to a webpage determined by the advertiser. The advertiser is then charged based on either the user selecting the advertisement or the advertisement being included on a webpage.

SUMMARY OF THE INVENTION

Photographic images of geolocations often capture places of business. These images may be used to direct a user to an advertiser's physical location. To direct a user to an advertiser's location, advertising units can be retrieved and placed on the image based on a number of factors such as, for example, the geolocation corresponding to the photographic image. If an advertising unit is selected by a user, the user may be directed to an image of the advertiser's geolocation.

The embodiments described below include systems, methods, and computer storage mediums for directing a user to an image of an advertiser's geolocation. An exemplary method includes retrieving a first image associated with a geolocation where the geolocation is based on a user action. At least one advertising unit is also retrieved based on at least the geolocation associated with the first image. Each advertising unit includes at least one geolocation associated with an advertiser. At least one advertising unit is then placed on the first image. A second image is retrieved when a placed advertising unit is selected by the user. The second image is retrieved based on the geolocation associated with the placed advertising unit.

Further features and advantages of this invention described herein, as well as the structure and operation of various embodiments, are described in detail below with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments are described with reference to the accompanying drawings. In the drawings, like reference numbers may indicate identical or functionally similar elements. The drawing in which an element first appears is generally indicated by the left-most digit in the corresponding reference number.

FIG. **1**A is an example system environment that may be used to direct a user to an image of an advertiser's geolocation.

FIG. **1**B is another example system environment that may be used to direct a user to an image of an advertiser's geolocation.

FIG. **2** is a flowchart illustrating an exemplary method that may be used to direct a user to an image of an advertiser's geolocation.

FIG. **3** is an example map interface that may be used to allow a user to select a geolocation, according to one embodiment.

FIG. **4**A is an example panoramic interface of a geolocation that includes an image and an example advertising unit that is placed on the image, according to one embodiment.

FIG. **4**B is an example panoramic interface of a geolocation that can be navigated to by selecting the advertising unit in FIG. **4**A, according to one embodiment.

FIG. **5**A is an example panoramic interface of a geolocation that includes an image and example advertising units that are placed on the image, according to one embodiment.

FIG. **5**B is an example panoramic interface of a geolocation that can be navigated to by selecting one of the advertising units in FIG. **5**A, according to one embodiment.

FIG. **6** illustrates an example computer in which embodiments of the present disclosure, or portions thereof, may be implemented.

DETAILED DESCRIPTION

In the following detailed description, references to "one embodiment," "an embodiment," "an example embodiment," etc., indicate that the embodiment described may include a particular feature, structure, or characteristic. Every embodiment, however, may not necessarily include the particular feature, structure, or characteristic. Thus, such phrases are not necessarily referring to the same embodiment. Further, when a particular feature, structure, or characteristic is described in connection with an embodiment, it is submitted that it is within the knowledge of one skilled in the art to effect such feature, structure, or characteristic in connection with other embodiments whether or not explicitly described.

Embodiments described herein make reference to an "advertising unit." An "advertising unit" can include any type of advertisement that can be displayed on a computing device, such as a banner advertisement, a text-based advertisement, etc. "Advertising units" may incorporate directional information, logos, or other images as well as textual information and interactive elements.

The following detailed description refers to the accompanying drawings that illustrate exemplary embodiments. Other embodiments are possible, and modifications can be made to the embodiments within the spirit and scope of this description. Those skilled in the art with access to the teachings provided herein will recognize additional modifications, applications, and embodiments within the scope thereof and additional fields in which embodiments would be of significant utility. Therefore, the detailed description is not meant to limit the embodiments described below.

This Detailed Description is divided into sections. The first and second sections describe example system and method embodiments that may be used to direct a user to an image of an advertiser's geolocation. The third section describes exemplary interfaces that can be used to carry out the embodiments described herein. The fourth section describes an example computer system that may be used to implement the embodiments described herein.

Example System Embodiments

A. Map Server Embodiment

FIG. **1**A is an example system environment **100**A that may be used to direct a user to an image of an advertiser's geolocation. System **100**A includes map server **101**. Map server **101** includes advertising unit module **102**, map-image mod-

ule **103**, advertising unit placement module **104**, and user interface module **105**. System **100**A also includes advertising unit database **106**, map database **107**, panoramic image database **108**, network **110**, and client device **120**.

Network **110** can include any network or combination of networks that can carry data communication. These networks can include, for example, a local area network (LAN) or a wide area network (WAN), such as the Internet. LAN and WAN networks can include any combination of wired (e.g., Ethernet) or wireless (e.g., Wi-Fi or 3G) network components.

Client device **120** can include any computing device capable of communicating with a geographic information system ("GIS") including, for example, stationary computing devices (e.g., desktop computers) and mobile computing devices such as, for example, tablets, smartphones, or other network enabled portable digital devices. Mobile computing devices may utilize Global Positioning System ("GPS") data, touch-screen interfaces, and location services to assist with retrieving and displaying geolocation images and advertising units. Map server **101**, client device **120**, advertising unit database **106**, map database **107**, and panoramic image database **108** also can run on any computing device. Each component may run on a distribution of computer devices or a single computer device. Examples of computing devices include, but are not limited to, a central processing unit, an application-specific integrated circuit, a computer, workstation, distributed computing system, computer cluster, embedded system, stand-alone electronic device, networked device, mobile device (e.g. mobile phone, smart phone, personal digital assistant (PDA), navigation device, tablet or mobile computing device), rack server, set-top box, or other type of computer system having at least one processor and memory. A computing process performed by a clustered computing environment or server farm may be carried out across multiple processors located at the same or different locations. Hardware can include, but is not limited to, a processor, memory and user interface display.

Map server **101** can be any GIS capable of capturing, storing, manipulating, analyzing, managing, and presenting geographically referenced data. Map server **101** includes advertising unit module **102**, map-image module **103**, advertising unit placement module **104**, and user interface module **105**. These modules, however, are not intended to limit the embodiments described herein. Consequently, one of skill in the art will readily understand how the functionality described herein may be implemented by using one or more alternative modules.

1. Map-Image Module

Map server **101** includes map-image module **103** that is configured to retrieve a first image associated with a geolocation, where the geolocation is determined based on a user action. The image can include either one image or a combination of images with fields of view up to and including 360 degrees. The image is associated with the geolocation of where the image was captured. The geolocation is then used to retrieve the image from a database, such as, for example, panoramic image database **108**.

In some embodiments, the user action can include changes in the user's geolocation. For example, the user's geolocation can be determined based on GPS data collected from client device **120**. Map-image module **103** can utilize this GPS data to retrieve an image that corresponds to the user's geolocation.

In some embodiments, the user action can include a touch-screen gesture. For example, the user may view an image of a first geolocation on a mobile device configured to accept touch gestures. The user can then navigate to a second geolocation via a touch gesture such as, for example, panning the image, whereby map-image module **103** will retrieve an image that corresponds to the second geolocation.

In some embodiments, the user action can include a user selection. For example, the user can select a point on a map that can be utilized by map-image module **103** to determine the geolocation. This example is described in more detail in reference to FIG. **3**, herein. The user action can also include the user selecting a point within an image of a neighboring geolocation. This example is described in more detail in reference to FIGS. **4**A, **4**B, **5**A and **5**B, herein. In some embodiments, the user may select a URL link that navigates the user to a webpage that includes a map that references a geolocation or a photographic image of a geolocation.

Map-image module **103** is also configured to retrieve a second image when a placed advertising unit is selected by the user. The second image is retrieved based on a geolocation associated with the placed advertising unit. In some embodiments, the geolocation is determined by the advertiser. In other embodiments, the geolocation is determined by map server **101**. Map server **101** may determine the geolocation by, for example, finding the advertiser's business location that is closest to the geolocation selected by the user. Combinations of these two embodiments may also be used.

Map-image module **103** may also be configured to retrieve a map or other geographically referenced data. This information may be acquired from a database such as, for example, map database **107**. In one embodiment, map-image module **103** retrieves a map and additional data indicating the geolocations on the map that have corresponding photographic images. The map and additional data may be made available for display to a user via user interface module **105**. The additional data is not limited to indicating which geolocations have corresponding photographic images, but may also include business locations, street names, addresses, traffic information, or other useful geographically referenced data.

2. Advertising Unit Module

Map server **101** also includes advertising unit module **102** that is configured to retrieve at least one advertising unit. The advertising units may be stored with a collection of advertising units in a database such as, for example, advertising unit database **106**. An advertising unit may be retrieved based on several target factors such as, for example, the geolocation associated with an image or a geolocation included in each advertising unit. One or more geolocations associated with an advertiser can be included for each advertising unit.

The advertising units can also include a bid amount that can be based on various pricing models including, for example, cost-per-click (CPC) and cost-per-impression (CPM). A CPC pricing model charges the advertiser the bid amount each time a user selects an advertising unit associated with the advertiser. A CPM pricing model charges the advertiser the bid amount each time an advertising unit is displayed. Either pricing model, as well as other pricing models, may be used independently or in combination.

In some embodiments, one or more advertising units are retrieved based on the geolocation selected by a user. For example, if the user selects a geolocation from a map that corresponds to an intersection of two streets, advertising unit module **102** may retrieve one or more advertising units based on the geolocation of businesses located along both streets.

In some embodiments, advertising units are retrieved based one or more target factors. Target factors can be determined from information associated with a user such as, for example, a user profile. The user profile may store information such as, for example, previous searches conducted by the

user, including search results, websites visited by the user, the approximate location of the user, and demographic information about the user. When the user chooses to view an image of a geolocation, advertising unit module **102** may utilize information in the user's profile to retrieve a targeted advertising unit. For example, if a user previously conducted a search for hotels around a geolocation, advertising unit module **102** may attempt to retrieve advertising units associated with hotel vendors having geolocations proximate to the selected geolocation. Other information associated with a user may be used in a similar fashion to retrieve advertising units.

In some embodiments, advertising units are retrieved based on one or more objects captured in the image of the geolocation. For example, if the user is viewing a hotel captured in the image, advertising units associated with other hotels can be retrieved. Similarly, if the user is viewing a house or building for sale, advertising units corresponding to real estate agents can be retrieved.

In some embodiments, advertising units are retrieved based on a combination of one or more objects captured in the image and the physical location of the user. For example, if the user is viewing an image of a geolocation such as, for example, a landmark or tourist destination, that is a certain distance from the user's actual physical location, advertising units for hotels or other tourist related businesses can be retrieved. Alternatively, if the user's physical location is relatively close to the geolocation, advertising units targeted to local residents can be retrieved.

Target factors can also be determined from information associated with an advertiser such as, for example, a geographical range, a product or service category, key words, or target demographics. This information may be stored with each advertising unit or may be stored in an advertiser's profile. Advertising module **102** may then utilize this information to select one or more advertising units targeted to the user and/or the geolocation selected by the user. For example, if a user previously conducted a search for hotels at a location, advertising unit module **102** may locate advertising units from advertisers proximate to the selected geolocation that offer services to travelers. Other information associated with an advertiser may be used in a similar fashion to retrieve advertising units.

In some embodiments, advertising units may be retrieved based on the outcome of an auction. The auction may allow multiple advertisers to compete for advertising unit space on an image of a geolocation. The outcome of the auction may be based on information associated with the advertiser such as, for example, a geographical range, a product or service category, key words, or target advertising demographics. The outcome may also be based on, for example, the pricing model of the auction such as, for example, CPC or CPM, the price an advertiser is willing to pay, and/or the likelihood of a user selecting the advertising unit.

3. Advertising Unit Placement Module

Map server **101** further includes advertising unit placement module **104** that is configured to place one or more advertising units on an image. In some embodiments, advertising units are placed at positions toward the bottom of the image. In some embodiments, advertising units are placed based on performing an analysis of the image to determine an area on the image outside the user's area of interest. For example, advertising unit placement module **104** may analyze the pixels of the image to determine an image location that does not include an object assumed to be of interest to the user. For instance, if the image includes a building such as a landmark, advertising unit placement module **104** may analyze the image to determine a position for placing the advertisement that does not include the landmark.

To analyze the photographic image, advertising unit placement module **104** may utilize the pixels of the image and/or data included with the image. In some embodiments, data may be included with the image that describes the scene captured in the image. For example, the data may include a distance value for one or more pixels in the image that indicates the distance between an object captured in the image and the image capture device. This data can be utilized to determine objects in the image such as, for example, streets, sidewalks, the sky, and other areas that may not be of interest to the user.

In some embodiments, advertising unit placement module **104** will analyze the photographic image to locate pixels that represent the background of the photographic image. The background may include objects such as streets, sidewalks, and areas above or below a horizon line. These pixels may be located by comparing the color of each pixel with its neighboring pixels. Streets, for example, may be located by identifying large groups of similarly colored pixels positioned toward the bottom of the image. The areas above and below the horizon line, for example, may be located by first identifying the horizon line, then identifying the area above and below the horizon line. Horizon lines may be located by, for example, identifying a color change that occurs along an approximately straight line across the image. Other useful ways for locating objects in an image may also include the embodiments described in U.S. patent application Ser. No. 13/187,193, which is incorporated by reference herein in its entirety.

Advertising unit placement module **104** may also be configured to organize one or more selected advertising units based on a category. For example, multiple advertising units may be selected to be placed on an image. Each advertising unit may include a category that describes the products and services offered by an advertiser. Instead of placing each advertising unit separately, as described above, advertising unit placement module **104** may organize advertising units for similar products and/or services in a category and place a category object on the image. Categories are not intended to be limited to the products and service descriptions included by advertisers, but may also include factors such as, for example, an advertiser's distance from a selected geolocation.

4. User Interface Module

Map server **101** also includes user interface module **105**. User interface module **105** is configured to display maps, geographically referenced data, and images of geolocations provided by map-image module **103**, and advertising units provided by advertising unit module **102**.

User interface module **105** may also be configured to allow a user to select geolocations from either a map or an image of a geolocation. Example embodiments are described with reference to FIGS. **3**, **4**A, **4**B, **5**A and **5**B, herein.

User interface module **105** may also be configured to allow a user to select an advertising unit that is placed on an image of a geolocation. In some embodiments, when a user selects an advertising unit, user interface module **105** retrieves and displays an image of the geolocation associated with the advertising unit. This may be achieved by, for example, providing the geolocation associated with the selected advertising unit to map-image module **103**. Map-image module **103** may then retrieve the image from map database **107**.

In some embodiments, user interface module **105** navigates the user through a series of geolocation images captured along a path from the geolocation associated with the initial

image to the geolocation associated with the advertising unit. This may be achieved by, for example, providing the initial image's geolocation and the geolocation associated with the advertising unit to map-image module **103**. Map image module **103** may then determine a path between the two geolocations and retrieve one or more images along the path. These images may then be provided to user interface module **105** for display.

In some embodiments, user interface module **105** directs the user to information associated with the advertising unit. This may include, for example, navigating the user to an advertiser's landing webpage or another webpage designated by the advertising unit.

B. Client Device Embodiment

FIG. **1**B is an example system environment **100**B that may be used to direct a user to an image of an advertiser's geolocation. System **100**B includes map server **101**. Map server **101** includes advertising unit module **102** and map-image module **103**. System **100**B also includes advertising unit database **106**, map database **107**, panoramic image database **108**, network **110**, and client device **120**. Client device **120** includes advertising unit placement module **104** and user interface module **105**.

System **100**B operates in a similar manner to system **100**A, except that the functions of advertising unit placement module **104** and user interface module **105** are carried out by client device **120**.

Advertising unit placement module **104** communicates with advertising unit module **102** and map-image module **103** via network **110**. Advertising unit placement module **104** retrieves an image of a geolocation from map-image module **103**. Advertising unit placement module **104** also retrieves one or more advertising units from advertising unit module **102**. Advertising unit placement module **104** then determines where to place the one or more advertising units on the geolocation image using one of the placement techniques described above. The geolocation image and the one or more advertising units are then displayed using user interface module **105** with the advertising units displayed in the determined locations.

Various aspects of embodiments described herein can be implemented by software, firmware, hardware, or a combination thereof. The embodiments, or portions thereof, can also be implemented as computer-readable code. For example, advertising unit module **102**, map-image module **103**, advertising unit placement module **104**, and user interface module **105** may be implemented in one or more computer systems or other processing systems. The embodiments in systems **100**A and **100**B are not intended to be limiting in any way.

Example Method Embodiments

FIG. **2** is a flowchart illustrating an exemplary method **200** that may be used to direct a user to an image of an advertiser's geolocation. While method **200** is described with respect to one embodiment, method **200** is not meant to be limiting and may be used in other applications. Additionally, method **200** may be carried out by systems **100**A or **100**B, for example.

Method **200** retrieves a first image associated with a geolocation, where the geolocation is based on a user action (step **210**). In some embodiments, the user selects a point on a map or selects a point in an image of a geolocation. In some embodiments, the user selects a URL link that navigates that user to a webpage that includes a map referencing a geolocation or a photographic image of a geolocation. In some embodiments, the geolocation is determined from GPS data retrieved from client device **120**. Step **210** may be carried out by map-image module **103** embodied in systems **100**A or **100**B, for example.

Method **200** also selects at least one advertising unit based on at least the geolocation associated with the first image (step **220**). Each advertising unit includes at least one geolocation associated with an advertiser. In some embodiments, the advertising units are retrieved based on the geolocation selected by the user, information associated with the user, information associated with the advertiser, and/or the outcome of an auction between advertisers. Step **220** may be carried out by advertising unit module **102** embodied in systems **100**A or **100**B, for example.

Method **200** then places the at least one advertising unit on the first image (step **230**). Any technique for placing one image on another image may be used. These placement techniques are readily understood by a person of skill in the art. Step **230** may be carried out by advertising unit placement module **104** embodied in systems **100**A and **100**B, for example.

Finally, method **200** retrieves a second image when an placed advertising unit is selected by the user (step **240**). The second image is retrieved based on the geolocation associated with the placed advertising unit. In some embodiments, the second image is displayed to the user via a user interface such as, for example, user interface module **105**. Step **240** may be carried out by map-image module **103** embodied in systems **100**A or **100**B, for example.

Additional Example Embodiments

While system **100**A embodied in FIG. **1**A shows map server **101** including advertising unit module **102**, map-image module **103**, advertising unit placement module **104**, and user interface module **105**, map server **101** can include more or fewer modules. Similarly, while system **100**B embodied in FIG. **1**B shows map server **101** including advertising unit module **102** and map-image module **103**, and client device **120** including advertising unit placement module **104** and user interface module **105**, map server **101** and client device **120** can also include more or fewer modules. Additionally, map server **101** and client device **120** may each include a combination of the modules described above.

Below are example interfaces that may be used to implement the embodiments described with reference to systems **100**A and **100**B, and method **200**.

A. Example Map Interface

FIG. **3** is an example map interface **300** that may be used to allow a user to select a geolocation, according to an embodiment. Map interface **300** includes map **301**, compass **302**, pegman selector **303**, scale control **304**, orientation indicator **305**, preview **306**, and pegman **307**.

In some embodiments, map **301** is retrieved from map database **107** by map-image module **103**. Once map-image module retrieves map **301**, map **301** can be displayed to a user by user interface module **105** via advertising unit placement module **104**. User interface module **105** may then add one or more interface elements to map **301** such as, for example, compass **302**, pegman selector **303**, scale control **304**, orientation indicator **305**, preview **306**, and pegman **307**.

Compass **302** may be used to either rotate map **301** to an alternate orientation or pan map **301**. Pegman selector **303** may be used to select pegman **307** for placing onto map **301**.

Scale control **304** may be used to change the zoom factor of map **301**. Orientation indicator **305** may be used to indicate the anticipated orientation of a image that will be displayed when pegman **307** is placed on map **301**. Preview **306** may be used to show a thumbnail image of an image that corresponds to the geolocation indicated by pegman **307**. Pegman **307** may be used to select a point on map **301** for which an image of a geolocation that corresponds to the selected point may be retrieved. The image may then be displayed in accordance with, for example, the embodiments in FIGS. **4**A and **5**A. Some or all of these interface elements may be included in one or more embodiments. Additionally, map interface **300** is not intended to limit the embodiments described herein.

B. Example Panoramic Interfaces

FIG. **4**A is an example panoramic interface **400**A for a geolocation that includes an image and an example advertising unit that is placed on the image, according to one embodiment. Panoramic interface **400**A includes map **401**, compass **402**, image scale control **404**, orientation indicator **405**, panoramic image **406**, pegman **407**, navigation controls **408**, advertising unit **409**, and address indicator **410**.

In some embodiments, panoramic image **406** is retrieved from panoramic image database **108** by map-image module **103**. Panoramic image **406** is used to show the image corresponding to the geolocation selected by a user. In this example, panoramic image **406** is retrieved based on the user conducting a search for hotels in the Washington D.C. area and selecting to view the geolocation associated with one of the hotels appearing in the search results.

Once advertising unit **409** is selected from advertisement database **106** by advertisement module **102**, advertising unit placement module **104** places advertising unit **409** onto panoramic image **406**. Panoramic image **406** is then displayed to a user through user interface module **105** via advertising unit placement module **104**. User interface module **105** may then add one or more interface elements to panoramic image **406** such as, for example, map **401**, compass **402**, scale control **404**, orientation indicator **405**, pegman **407**, navigation controls **408**, and address indicator **410**.

Compass **402** may be used to either rotate map **401** to an alternate orientation or select a new geolocation. Scale control **404** may be used to change the zoom factor of panoramic image **406**. Orientation indicator **405** may be used to indicate the current orientation of panoramic image **406**. Pegman **407** may be used to indicate the geolocation on map **401** that corresponds to panoramic image **406**. Navigation controls **408** may be used to navigate to a neighboring geolocation whereby an image of the neighboring geolocation will be retrieved and displayed. Address indicator **410** may be used to show the user the address, or an approximate address, of the selected geolocation.

Advertising unit **409** is an example advertising unit that provides an indication of where an advertiser associated with advertising unit **409** is generally located. For example, advertising unit **409** is shaped like an arrow and may be modified based on where the advertiser is located in relation to the geolocation of the image. In some embodiments, advertising unit **409** as well as other advertising units may be aligned along the bottom of panoramic image **406**.

In this embodiment, advertising unit **409** was retrieved based on the advertiser including, with advertising unit **409**, a keyword "hotel" and a geolocation range that encompassed the geolocation selected by the user. The retrieval was also based on the user's search results.

In some embodiments, however, advertising unit **409** may be selected by a user. If selected, the user will be directed to an image of the advertiser's geolocation. This may be achieved either by retrieving and displaying a new panoramic image of the advertiser's geolocation or by navigating the user along a path from the panoramic image **406** to a new panoramic image of the advertiser's geolocation.

Panoramic interface **400**A may also include interface controls that allow a user to select points within panoramic image **406** to navigate through neighboring panoramic images. If a point within panoramic image **406** is selected, a panoramic image corresponding to the selected point may be displayed with a placed advertising unit. If the user navigates to a neighboring panoramic image, the neighboring image may be displayed with the same or a different advertising unit. Other interface controls may also be provided to assist with navigating through panoramic images.

Some or all of the interface elements and controls described herein may be included in one or more embodiments. Additionally, panoramic interface **400**A is not intended to limit the embodiments described herein.

FIG. **4**B is an example panoramic interface **400**B for a geolocation that can be navigated to by selecting advertising unit **409** in FIG. **4**A, according to an embodiment. Panoramic interface **400**B includes a number of interface elements from panoramic interface **400**A such as compass **402**, image scale control **404**, pegman **407**, and navigation controls **408**. Map **421**, orientation indicator **425**, panoramic image **426**, and address indicator **430** correspond to map **401**, orientation indicator **405**, panoramic image **406**, and address indicator **410**, respectively, but have been updated based on the new geolocation.

Panoramic image **426** is retrieved using the same process as described for panoramic image **406**. In this embodiment, however, panoramic image **426** is retrieved based solely on the geolocation associated with advertising unit **409**.

Similarly to panoramic interface **400**A, user interface module **105** may add one or more interface elements to panoramic image **426**. Additionally, while this example does not include any advertising units, one or more advertising units may also be included.

Orientation indicator **425** has been updated from orientation indicator **405** to reflect the new orientation position of panoramic image **426**. Additionally, address indicator **430** has been updated to reflect the new geolocation.

Similarly to panoramic interface **400**A, panoramic interface **400**B may also include interface controls that allow a user to select points within panoramic image **426** to navigate through neighboring panoramic images. Some or all of the interface elements and controls described herein may be included in one or more embodiments. Additionally, panoramic interface **400**B is not intended to limit the embodiments described herein.

FIG. **5**A is an example panoramic interface of a geolocation that includes a photographic image and example advertising units that are placed on the image, according to an embodiment. Panoramic interface **500**A includes map **501**, compass **502**, image scale control **504**, orientation indicator **505**, panoramic image **506**, pegman **507**, navigation controls **508**, advertising units **509***a-c*, and address indicator **510**.

In some embodiments, panoramic image **506** is retrieved from panoramic image database **108** by map-image module **103**. Panoramic image **506** may be used to show the image corresponding to the geolocation selected by a user. In this embodiment, panoramic image **506** is retrieved based on the user selecting a geolocation by placing pegman **307** on a geolocation in map **301**.

Once advertisings unit **509***a-c* are selected from advertisement database **106** by advertisement module **102**, advertising unit placement module **104** places advertising units **509***a-c* onto panoramic image **506**. Panoramic image **506** is then displayed to a user through user interface module **105** via advertising unit placement module **104**. User interface module **105** may then add one or more interface elements to panoramic image **506** such as, for example, map **501**, compass **502**, scale control **504**, orientation indicator **505**, pegman **507**, navigation controls **508**, and address indicator **510**.

Compass **502** may be used to either rotate map **501** to an alternate orientation or select a new geolocation. Scale control **504** may be used to change the zoom factor of panoramic image **506**. Orientation indicator **505** may be used to indicate the current orientation of panoramic image **506**. Pegman **507** may be used to indicate the geolocation on map **501** that corresponds to panoramic image **506**. Navigation controls **508** may be used to navigate to a neighboring geolocation whereby an image of the neighboring geolocation will be retrieved and displayed. Address indicator **510** may be used to show the user the address, or an approximate address, of the selected geolocation.

Advertising units **509***a-c* are example advertising units that provide an indication of where an advertiser associated with each advertising unit is generally located. For example, advertising units **509***a* and **509***b* point in one direction while advertising unit **509***c* points in the opposite direction. In some embodiments, advertising units **509***a-c*, as well as other advertising units, may be aligned along the bottom of panoramic image **506**.

In this embodiment, advertising unit **509** was retrieved based on the advertiser including, with advertising unit **509**, a keyword "hotel" and a geolocation range that encompassed the geolocation selected by the user. The retrieval was also based on the user's profile that included search results for hotels.

In some embodiments, advertising units **509***a-c* may be selected by a user. If selected, the user is directed to an image of the advertiser's geolocation. This may be achieved either by retrieving and displaying a new panoramic image of the advertiser's geolocation or by navigating the user along a path from the panoramic image **506** to a new panoramic image of the advertiser's geolocation.

Panoramic interface **500**A may also include interface controls that allow a user to select points within panoramic image **506** to navigate through neighboring panoramic images. If a point within panoramic image **506** is selected, a panoramic image corresponding to the selected point may be displayed with a placed advertising unit. If the user navigates to a neighboring panoramic image, the neighboring image may be displayed with the same or a different advertising unit. Other interface controls may also be provided to assist with navigating through panoramic images.

Some or all of the interface elements and controls described herein may be included in one or more embodiments. Additionally, panoramic interface **500**A is not intended to limit the embodiments described herein.

FIG. **5**B is an example panoramic interface **500**B for a geolocation that may be navigated to by selecting advertising unit **509***a* in FIG. **5**B, according to one embodiment. Panoramic interface **500**B includes a number of interface elements from panoramic interface **500**A such as compass **502**, image scale control **504**, pegman **507**, and navigation controls **508**. Map **521**, orientation indicator **525**, panoramic image **526**, and address indicator **530** correspond to map **501**, orientation indicator **505**, panoramic image **506**, and address indicator **510**, respectively, but have been updated based on the new geolocation.

Panoramic image **526** may be retrieved using the same process as described for panoramic image **506**. In this embodiment, however, panoramic image **526** is retrieved based solely on the geolocation associated with advertising unit **509***a* that was selected by the user.

Similarly to panoramic interface **500**A, user interface module **105** may also add one or more interface elements to panoramic image **526**. Additionally, while this example does not include any advertising units, one or more advertising units may also be included.

Orientation indicator **525** has been updated from orientation indicator **505** to reflect the new orientation position of panoramic image **526**. Additionally, address indicator **530** has been updated to reflect the new geolocation.

Similarly to panoramic interface **500**A, panoramic interface **500**B may also include interface controls that allow a user to select points within panoramic image **526** to navigate through neighboring panoramic images. Some or all of the interface elements and controls described herein may be included in one or more embodiments. Additionally, panoramic interface **500**B is not intended to limit the embodiments described herein.

Example Computer System

FIG. **6** illustrates an example computer system **600** in which embodiments of the present disclosure, or portions thereof, may be implemented. For example, map server **101**, advertising unit database **106**, map database **107**, panoramic image database **108**, and client device **120** may be implemented in one or more computer systems **600** using hardware, software, firmware, computer readable storage media having instructions stored thereon, or a combination thereof.

One of ordinary skill in the art may appreciate that embodiments of the disclosed subject matter can be practiced with various computer system configurations, including multi-core multiprocessor systems, minicomputers, mainframe computers, computers linked or clustered with distributed functions, as well as pervasive or miniature computers that may be embedded into virtually any device.

For instance, a computing device having at least one processor device and a memory may be used to implement the above described embodiments. A processor device may be a single processor, a plurality of processors, or combinations thereof. Processor devices may have one or more processor "cores."

Various embodiments are described in terms of this example computer system **600**. After reading this description, it will become apparent to a person skilled in the relevant art how to implement the invention using other computer systems and/or computer architectures. Although operations may be described as a sequential process, some of the operations may in fact be performed in parallel, concurrently, and/or in a distributed environment, and with program code stored locally or remotely for access by single or multiprocessor machines. In addition, in some embodiments the order of operations may be rearranged without departing from the spirit of the disclosed subject matter.

As will be appreciated by persons skilled in the relevant art, processor device **604** may be a single processor in a multi-core/multiprocessor system, such system operating alone, or in a cluster of computing devices operating in a cluster or server farm. Processor device **604** is connected to a commu-

nication infrastructure **606**, for example, a bus, message queue, network, or multi-core message-passing scheme.

Computer system **600** also includes a main memory **608**, for example, random access memory (RAM), and may also include a secondary memory **610**. Secondary memory **610** may include, for example, a hard disk drive **612**, and removable storage drive **614**. Removable storage drive **614** may include a floppy disk drive, a magnetic tape drive, an optical disk drive, a flash memory drive, or the like. The removable storage drive **614** reads from and/or writes to a removable storage unit **618** in a well-known manner. Removable storage unit **618** may include a floppy disk, magnetic tape, optical disk, a flash memory, etc. which is read by and written to by removable storage drive **614**. As will be appreciated by persons skilled in the relevant art, removable storage unit **618** includes a computer readable storage medium having stored thereon computer software and/or data.

In alternative implementations, secondary memory **610** may include other similar means for allowing computer programs or other instructions to be loaded into computer system **600**. Such means may include, for example, a removable storage unit **622** and an interface **620**. Examples of such means may include a program cartridge and cartridge interface (such as that found in video game devices), a removable memory chip (such as an EPROM, or PROM) and associated socket, and other removable storage units **622** and interfaces **620** which allow software and data to be transferred from the removable storage unit **622** to computer system **600**.

Computer system **600** may also include a communications interface **624**. Communications interface **624** allows software and data to be transferred between computer system **600** and external devices. Communications interface **624** may include a modem, a network interface (such as an Ethernet card), a communications port, a PCMCIA slot and card, or the like. Software and data transferred via communications interface **624** may be in the form of signals, which may be electronic, electromagnetic, optical, or other signals capable of being received by communications interface **624**. These signals may be provided to communications interface **624** via a communications path **626**. Communications path **626** carries signals and may be implemented using wire or cable, fiber optics, a phone line, a cellular phone link, an RF link or other communications channels.

In this document, the terms "computer storage medium" and "computer readable storage medium" are used to generally refer to media such as removable storage unit **618**, removable storage unit **622**, and a hard disk installed in hard disk drive **612**. Computer storage medium and computer readable storage medium may also refer to memories, such as main memory **608** and secondary memory **610**, which may be memory semiconductors (e.g. DRAMs, etc.).

Computer programs (also called computer control logic) are stored in main memory **608** and/or secondary memory **610**. Computer programs may also be received via communications interface **624**. Such computer programs, when executed, enable computer system **600** to implement the embodiments described herein. In particular, the computer programs, when executed, enable processor device **604** to implement the processes of the embodiments, such as the stages in the methods illustrated by flowchart **200** of FIG. **2**, discussed above. Accordingly, such computer programs represent controllers of computer system **600**. Where an embodiment is implemented using software, the software may be stored in a computer storage medium and loaded into computer system **600** using removable storage drive **614**, interface **620**, and hard disk drive **612**, or communications interface **624**.

Embodiments of the invention also may be directed to computer program products including software stored on any computer readable storage medium. Such software, when executed in one or more data processing device, causes a data processing device(s) to operate as described herein. Examples of computer readable storage mediums include, but are not limited to, primary storage devices (e.g., any type of random access memory) and secondary storage devices (e.g., hard drives, floppy disks, CD ROMS, ZIP disks, tapes, magnetic storage devices, and optical storage devices, MEMS, nanotechnological storage device, etc.).

CONCLUSION

The Summary and Abstract sections may set forth one or more but not all exemplary embodiments as contemplated by the inventor(s), and thus, are not intended to limit the present invention and the appended claims in any way.

The foregoing description of specific embodiments so fully reveal the general nature of the invention that others can, by applying knowledge within the skill of the art, readily modify and/or adapt for various applications such specific embodiments, without undue experimentation, without departing from the general concept of the present invention. Therefore, such adaptations and modifications are intended to be within the meaning and range of equivalents of the disclosed embodiments, based on the teaching and guidance presented herein. It is to be understood that the phraseology or terminology herein is for the purpose of description and not of limitation, such that the terminology or phraseology of the present specification is to be interpreted by the skilled artisan in light of the teachings and guidance.

The breadth and scope of the present invention should not be limited by any of the above-described exemplary embodiments.

What is claimed is:

1. A computer-implemented method comprising:

obtaining, by one or more processors, a first image associated with a geolocation, the first image being a street-level image;

selecting, by the one or more processors, an advertising unit based on at least the geolocation associated with the first image, wherein the advertising unit includes at least one geolocation associated with an advertiser;

placing, by the one or more processors, the advertising unit at a location on the first image based on one or more objects present in the first image; and

providing for presentation on a display of a client device, by the one or more processors, a second image when the placed advertising unit is selected by a user, wherein the second image is obtained based on the at least one geolocation associated with the advertiser.

2. The computer-implemented method of claim **1**, further comprising:

receiving at least one bid from a plurality of advertisers, wherein each bid indicates an amount an advertiser will pay for an advertising unit associated with the advertiser to be placed on the first image.

3. The computer-implemented method of claim **1**, wherein selecting the advertising unit is further based on a profile associated with the user.

4. The computer-implemented method of claim **1**, wherein selecting the advertising unit is further based on one or more searches previously conducted by the user.

5. The computer-implemented method of claim **1**, wherein placing the advertising unit further comprises:

organizing the advertising unit based on a category.

6. The computer-implemented method of claim 1, further comprising:

navigating the user through a series of images captured along a path from the geolocation associated with the first image to a geolocation associated with the second image.

7. A system comprising:

a map-image module, implemented on one or more processors, configured to:

obtain a first image associated with a geolocation, the first image being a street-level image; and

provide for presentation on a display of a client device, a second image when a placed advertising unit is selected by a user, wherein the second image is obtained based on at least one geolocation associated with an advertiser;

an advertising unit module, implemented on the one or more processors, configured to retrieve the advertising unit based on at least the geolocation associated with the first image, wherein the advertising unit includes at least one geolocation associated with the advertiser; and

an advertising unit placement module configured to place the advertising unit at a location on the first image based on one or more objects present in the first image.

8. The system of claim 7, wherein the advertising unit module is further configured to receive at least one bid from a plurality of advertisers, wherein each bid indicates an amount an advertiser will pay for an advertising unit associated with the advertiser to be placed on the first image.

9. The system of claim 7, wherein the advertising unit module is further configured to retrieve the at least one advertising unit is based on a profile created by the user.

10. The system of claim 7, wherein the advertising unit module is further configured to select the advertising unit based on one or more searches previously conducted by the user.

11. The system of claim 7, wherein the image placement module is further configured to organize the advertising unit based on a category.

12. The system of claim 7, wherein the map-image module is further configured to navigate the user through a series of images captured along a path from the geolocation associated with the first image to a geolocation associated with the second image.

13. An non-transitory computer readable storage medium having instructions encoded thereon that, when executed by one or more processors, causes the one or more processor to perform operations comprising:

obtaining a first image associated with a geolocation, the first image being a street-level image;

selecting an advertising unit based on at least the geolocation associated with the first image, wherein the advertising unit includes at least one geolocation associated with an advertiser;

placing the advertising unit on the first image based on one or more objects present in the first image; and

providing for presentation on a display of a client device, by the one or more processors, a second image when the placed advertising unit is selected by a user, wherein the second image is obtained based on the at least one geolocation associated with the advertiser.

14. The storage medium of claim 13, the operations further comprising:

receiving at least one bid from a plurality of advertisers, wherein each bid indicates an amount an advertiser will pay for an advertising unit associated with the advertiser to be placed on the first image.

15. The storage medium of claim 13, wherein selecting the advertising unit is further based on a profile created by the user.

16. The storage medium of claim 13, wherein selecting the advertising unit is further based on one or more searches previously conducted by the user.

17. The storage medium of claim 13, wherein placing the advertising unit further comprises:

organizing the advertising unit based on a category.

18. The storage medium of claim 13, the operations further comprising:

navigating the user through a series of images captured along a path from the geolocation associated with the first image to a geolocation associated with the second image.

19. A computer-implemented method comprising:

providing, by one or more processors, a first image associated with a geolocation, the first image being a street-level image;

providing, by the one or more processors, at least one advertising unit selected from a collection of advertising units based on at least the geolocation associated with the first image, wherein each advertising unit includes at least one geolocation associated with an advertiser;

placing, by the one or more processors, the at least one advertising unit on the first image based on one or more objects present in the first image; and

providing for presentation on a display of a client device, by the one or more processors, a second image when a placed advertising unit is selected by a user, wherein the second image is obtained based on the at least one geolocation associated with the advertiser.

20. A system comprising:

an advertising unit placement module, implemented on one or more processors, configured to:

select a first image associated with a geolocation, the first image being a street-level image;

select an advertising unit based on at least the geolocation associated with the first image, wherein the advertising unit includes at least one geolocation associated with the advertiser;

place the advertising unit on the first image based on one or more objects present in the image; and

provide for presentation on a display of a client device, a second image when the placed advertising unit is selected by a user,

wherein the second image is obtained based on the at least one geolocation associated with the advertiser.

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